

Quality of Life Assessment in Rural Areas by Using Intelligent Systems (Fuzzy Logic) Case Study: Mahban Sub-District, Nikshahr Township

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Extended Abstract

Introduction

Rural areas in less developed countries, including Iran, are facing with enormous challenges due to rising economic and social disparities between urban and rural areas. Hence, identifying and explaining the factors affecting quality of life in these areas is very important. Today the Quality of life is discussed as a key element in policy making and public policy. Results of the studies can help identify problematic areas, causes of people discontent, priorities of people in life, policies evaluation, ranking of locations, and compilation of management strategies and planning for community (town, village). It also facilitates understanding and classification of priorities of society issues for planners and managers in order to promote the quality of life.

New studies emphasize on two indicators to measure the quality of life in different parts of the world that are objective (quantitative) and subjective (qualitative). So, there are many methods to measure and evaluate quality of life including descriptive and inferential statistical and Non-statistical analyses. But since there are large inherent uncertainties ruling in the human sciences, especially

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in spatial planning and decision making, conclusive and traditional methods based on Boolean logic and having a two-value view, in case of confronting with inaccurate information and ill-defined concepts have very poor performance and is without any advantages to determine existing fact. This is due to many reasons such as relying on quantitative information more than qualitative, incomplete criteria and indicators, incompatible ideas and perceptions, risk and uncertainty and high costs of access to accurate information and etc. and it is not far less effective in precise speech of fact.

Therefore, to assess the quality of life (a concept that is relatively obscure), it is important to use new methods and multi-valued approach which make it possible to utilize compound collection of quantitative and qualitative indicators in various ranges and spans and provide more realistic results. The aim of this research is to assess and analyze the quality of life in rural areas by using "fuzzy logic" through objective (quantitative) and subjective (qualitative) indicators in economic and social terms.

Methodology

The method of the research is descriptive-analytic based on fuzzy logic. Statistical population is all households in villages with over 20 family from Mahban Sub-district, Nikshahr Township, located in south of Sistan and Baluchestan Province. Samples (for gathering information of subjective quality of life) according to the Cochran were obtained from the results of 273 questionnaires. Choosing the number of households in each village was based on the number and geographic dispersion of the villages. Concrete data of the research (quantitative) has been obtained from existing documents in governmental agencies, statistical documents and questionnaires. Procedure of assessment and analysis of the quality of life, by using fuzzy logic, has been done in three stages including fuzzy modeling input data, making inferences and making non-fuzzy. In the first step, after collection and classification of the data membership functions to fuzzy sets was defined in a range from high quality to low quality. In the next step, variables were found in a cluster. Then, using the Subscribe operation of fuzzy, based on opinion, expert, as the

knowledge base, and the Fuzzy rules of if-then in the software MATLAB, assessment and analysis was carried out. In the final stage, after reviewing the results of fuzzy rules, qualitative data during the process, as the "center", was converted into quantitative data.

Results and Discussion

The various natural structure of Mahban Sub-district has a great impact on the pattern of settlement and dispersion of villages, access to resources and the potential for development, the form of activities of the villagers, distribution services, network access and transportation, spatial distribution of population and finally the quality of life of rural people. This structural diversity causes differences in the villages to enjoy many blessings of life, such as water resources, land, pastures, transportation network, public services and other infrastructure. In general, natural structure of the region plays a fundamental role in unbalanced distribution of population, facilities and services between the villages. The results suggest that there is a significant difference between different rural settlements in quality of life. This difference is more significant in an objective way, so that it is fluctuated from the minimum ratio (0.145) in Moki Paiein Village to the maximum rate (0.501) in Keshik. The reasons for this difference can be attributed to rural location differences (height, location and geographic conditions arising).

However, in mental aspect, the rate quality of life varies from the minimum (0.460) in Titrandan Village to maximum (0.607) in Keshik. Subjective quality of life (satisfaction) in analogy with the objective quality of life is in the better state. That shows contentment and satisfaction of villagers is under the idea of fatalism. Totally in the view of objective quality of life, Keshik village stands in the highest rank and Moki Paiein Village in the lowest. However, in the view of subjective quality of life (satisfaction), Keshik Village is placed in the first rank and Titrandan in the last. The research results using Pearson Correlation showed that in the studied range, there is direct significant relationship between the objective quality of life and subjective one. It means that with increasing resources, facilities and services and

with promotion in their qualities, the level of satisfaction (economic and social) has also been increased and vice versa.

Conclusions

Results have overlapping and consistency with theoretical perspectives and research findings. This emphasizes on the remedy of the policies of economic and social development in rural areas to improve the quality of life. This is because quality of life in the study area is poor compared with other regions of the country.

Keywords: Fuzzy logic, Quality of life, Mahban Sub-district, Rural areas.

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